

Abstract Submitted  
for the DPP09 Meeting of  
The American Physical Society

**Direct measurement of the out-of-plane (optical) phonon spectrum in a 2D complex plasma crystal** L. COUEDEL, V. NOSENKO, S.K. ZHDANOV, A.V. IVLEV, H.M. THOMAS, G.E. MORFILL, Max-Planck Institute for Extraterrestrial Physics — The out-of-plane phonon spectrum of a 2D complex plasma crystal in the sheath of a RF discharge was measured using a novel imaging technique that allowed us to resolve the particle motion in the 3 dimensions. The out-of-plane mode was proven to have negative optical dispersion, as predicted a long time ago. Comparison with theory showed a remarkably good agreement. The effect of the plasma wakes on the dispersion relation is discussed.

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Date submitted: 21 Jul 2009

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